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Medical History

Benjamin Moore FRS (1867-1922)

Robin Agnew

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SUMMARY

Dr Benjamin Moore was the first Professor of Biochemistry in these islands. His life and medical career are described together with his prescient contributions to public health. A man of remarkable vision, his ideas were written more than three decades before the Beveridge Plan for a National Health Service.

INTRODUCTION.

The recent publication of a biography by his grandson reminded me of Benjamin Moore senior's contributions on social medicine.[1] The book is dedicated to "Dr. G.A.J. Pitt (who first suggested the biography) and in memory of my father, Dr. T. Moore (1900-1999)." The author was born in Cambridge and saw active service as an officer in the Royal Ulster Rifles in the Korean War (1950-1953). He graduated at Christ's College, Cambridge in Natural Science and after working for eight years as an oil geologist in Western Canada and Northern Brazil, he returned to England to study medicine, qualifying at St Bartholomew's Hospital in 1969; he later specialized in obstetrics and gynaecology. After working in Ireland and abroad he settled down as a consultant in Hereford, where he still lives. He has written one previous book entitled 'Alberta to the Amazon: Geological Travels in North and South America.'

Benjamin Moore junior's biography contains a useful resumé of his grandfather's career (pp.x-xi) and family tree of recent generations of the Moore family (p.xii).

In the PREFACE the author summarizes his grandfather's "short career and difficult family circumstances" and explains that pride in his family history was a prime motivation in writing the book but pointing out that, as his grandparent had died ten years before he was born, they had never met. However Moore junior was able to access many records in three volumes of Moore senior's collected papers as well as family photographs; the reproductions of these heirlooms enhance the value of this elegant biography of the first Professor of Biochemistry in these islands, firstly at Liverpool (1902) and later at Oxford (1920).

EARLY CAREER

Benjamin Moore was born in Paisley, near Glasgow, on 14 January 1867.

His parents, although living in Renfrewshire, were of Northern Irish origin. His father William Moore (1824-1912) was in the grocery business and married Mary Ann Ray in 1858, whose father also had a grocery shop in Paisley. On the death of his father in 1874, William inherited his father's small grocery shop in Conway Street situated between the Falls and Shankill Roads on the western side of Belfast.

He continued this business in a working class district for the next twenty-five years. Benjamin's early education took place at the nearby Belfast Model School. Modern readers may be surprised that the school was multi-denominational and this seems to have worked well until towards the end of the 19th century, when 'faith' schools took over and the intake of the Belfast Model School became largely protestant. Pupils came from a wide range of working and professional backgrounds and were offered a broad education in the Scottish tradition including basic literacy, science and vocational studies. 'Fees ranged from one to five guineas per quarter depending on the course being taken.' (p.3)

In his later terms at the Model School, Benjamin felt the need to augment his knowledge of Science if he were to achieve his ambition of entering Queen's College, Belfast. He enrolled for evening classes at the Belfast Working Men's Institute (WMI) over the next three years. (The WMI had been founded in 1868 to provide pre-university education in a wide range of subjects including science, chemistry and mathematics. He was diligent to such an extent that Benjamin Moore was awarded the Belfast Mayor's prize for overall achievement in 1886; in addition he won first class prizes for chemistry and philosophy. In 1887 he was awarded the Mayor of Belfast's prize for the second time, a first prize for mathematics and as a bonus, a Science Scholarship of £115 to guarantee his entry to 'Queen's'. He was then twenty years old and was described as 'a sturdy young man, short in stature compared to his father, with a fine head of dark hair and…a moustache.' (p.5) FIGURE 1.

Queen's College Belfast was founded in 1845 at a time when the city was expanding to become a major industrial centre

69 Greetby Hill, Ormskirk, Lancashire, L39 2DR

Correspondence to: Dr Robin Agnew,

rivendelm@yahoo.co.uk)

in the British Isles. It was a constituent college together with others at Galway and Cork, formed as the Queen's University in Ireland in 1850. In 1879 Queen's University was replaced by the Royal University, which became the National University of Ireland in 1908 and Queen's Belfast achieved independent university status.

When he entered university in the autumn of 1887, Moore intended to study engineering. This involved attendance at lectures in mathematics, physics, chemistry and physiology as well as engineering. He quickly showed an aptitude in chemistry and physics and was awarded the Andrews Studentship in organic and inorganic chemistry, chemical philosophy and physics in 1889 with a total value of £145. Supported by this scholarship and other smaller awards, he graduated as Bachelor of Arts (BA) with first class honours in experimental physics in 1890. The following year he was conferred as Bachelor in Engineering (B.Eng.) and in 1892 as MA Queen's College Belfast (1st Class Hons.).

At 'Queen's' he showed a 'profound knowledge of chemistry.'(p.8); possibly influenced by his professsors he decided to abandon a career in engineering in favour of postgraduate study in chemistry abroad. At that time Germany was at the forefront of scientific studies in chemistry and he was deservedly awarded an '1851' travelling research fellowship to study physical chemistry at Leipzig University between 1891-94.[2] The decision by the University to put Benjamin Moore's name forward was due to his flair for experimental science and laid the foundations for his future as the first professor of biochemistry in these islands.

At Leipzig he worked under the guidance of Professor Friedrich Wilhelm Ostwald (1853-1932), later to be awarded a Nobel Prize in physics (1909). Moore concentrated on physical chemistry and its application to biology. He then worked at the chemistry department of University College, London (UCL) for the next four years on the teaching staff and was influenced by such men as Sir William Ramsay (1852-1916) and Sir Edward Sharpey-Schafer (1850-1935). UCL, with close links to University College Hospital (UCH), was then at the 'cutting - edge' of physiological and pharmacological research, which was a great opportunity for Moore to further his career in physiology. He researched the spleen, the salivary glands and the chemistry of the adrenal cortex finally contributing an article on digestion to the first volume of Schafer's *Textbook of Physiology* in 1899, which involved some innovative ideas on the chemistry of digestion. In December 1898 he married Edith Francis (1871-1913) in London just prior to sailing across the Atlantic to take up his appointment as associate professor of physiology at Yale University Medical School in New Haven, where he further researched the function of the adrenal glands and the osmotic action of colloidal solutions. It was there that Edith gave birth to their son on 1st January 1900, who was named Thomas after his maternal grandfather.[3] Benjamin Moore returned to London as lecturer in physiology at Charing Cross Hospital Medical School between 1900 and 1902. In 1901 he was awarded the degree of Doctor of Science (Gold Medal) by his alma mater, Queen's College, Belfast. At this time he felt the need to acquire a British medical degree. Although over thirty years of age, he commenced to study for and, in 1907, became a member of the Royal College of Surgeons of England and a licentiate of the Royal College of Physicians of London.[4]

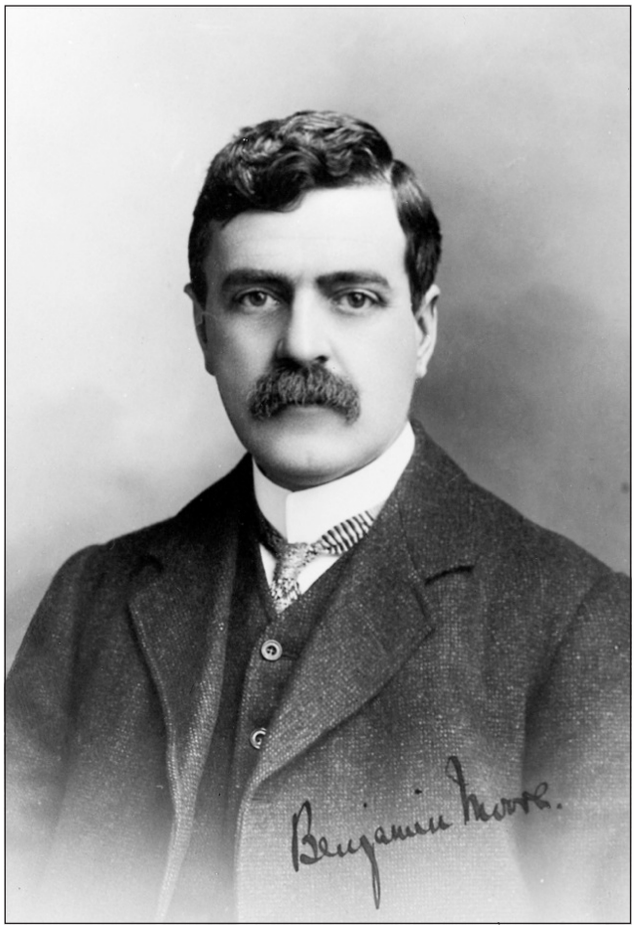

Fig 1: Benjamin Moore as a young man. With acknowledgement to the Image Department of the Wellcome Library, London.

In 1902 Moore was appointed to the newly founded Johnston Chair of Biochemistry in Liverpool, the first chair of its kind in these islands.

[William Johnston (1841-1917) of Bromborough, Cheshire was born in Northern Ireland and commenced his ship-owning business in 1863 at Liverpool. When his firm was taken over by Furness Withy & Co. in February 1903, Johnston endowed the Chair with £10,000. It was originally designated by the university senate as a Chair of Physiological Chemistry in April 1902 but the title was changed to 'Bio-Chemistry' and this hyphenated form existed for some years. 'Dr Benjamin Moore of the Royal University of Ireland was invited to be the first holder of the Chair in October 1902.'][5]

Moore's work at the Johnston Laboratory resulted in a plethora of publications from his department including ten in the *Bio-Chemical Journal,* which he and Edward Whitley

(1879-1945) had founded in 1906. These concerned the application of physico-chemical methods to biological problems and were rewarded by his election to the Fellowship of the Royal Society in 1912. Among his distinguished sponsors is the name of 'F.G. Hopkins', later Sir Frederick Gowland Hopkins (1861-1947).[6] During his stay in Liverpool Moore became acutely aware of how badly the Poor Law Hospitals, which catered for the overcrowded slums of an industrial city, compared with the Teaching Hospitals; this applied particularly to staff to patient ratios. Appalled by the dire social conditions of poverty and destitution both locally and nationally, Moore wrote a 204 page book on the subject. [7] In it he made some practical suggestions for improvements in public health, many of which were well ahead of his time.

In the PREFACE, he fulminated against the practitioners of fringe medicine who 'ruin our systems with drugs in attempting to exorcise the demon of disease, and when we fail we turn to the claptrap of faith-healing or homeopathy, imbued with all the spirit of the superstition and idolatry of the Middle Ages.' [8] 'It is only a strong public feeling, demanding a rationally constituted public medical service armed with powers to fight disease, which can bring reform in these matters.' [9] He was particularly concerned with the high mortality for the United Kingdom of pulmonary tuberculosis (TB), which he called the 'Great White Plague', quoting figures of 56,080 for 'the three kingdoms' for the year 1908. [10] Moore concluded that, with the foundation of a new 'National Health Service' (his words) and the provision of segregation for infectious cases in sanatoria, the disease could be eradicated. He even considered that the private sector could be included to reduce costs: 'although the burthen on the nation may be somewhat relieved by allowing the patient who can pay to do so, and to be treated in a separate

Sanatorium under the inspection and control of the State.'[11] Moore's figures for the cost of eradicating tuberculosis are interesting: he calculated that it would cost between seven and eight million pounds annually for five years. This compared very favourably with the existing cost of thirty million pa to the economy.

NOTIFICATION

Success for the scheme of segregation would depend on compulsory notification of TB so that, by the implementation of both methods, 'the disease could be efficiently stamped out'. [12]

Almost simultaneously, across the Irish Sea, a Tuberculosis Prevention (Ireland) Act (1913) ensured the notification of TB was 'necessary but still not compulsory'; this was a mistake in the legislation strongly opposed by Lady Aberdeen (1857-1939).[13] In England and Wales notification of TB passed into the Law in 1913 and was followed by compulsory isolation of TB patients. The death rate for TB, especially for urban males, was still high in the year 1910 and the public was quick to blame foreign immigrants for importing the disease.[14] Drawing a parallel with the quarantine rules that resulted in British dogs escaping hydrophobia, Moore strongly advised that 'Every case of immigration suspected of phthisis [infectious pulmonary TB] … must be examined' at the port of entry to the United Kingdom. In those found to be a danger to the native population, entry should be refused.[15]

'THE DAWN OF THE HEALTH AGE' AND FURTHER CAREER

The book engendered wide coverage by the Press, mostly with favourable reviews, especially in the north-west of England.[16] In Belfast, the *Telegraph* commented: 'His proposals may be looked upon by some as radical but that is what he intends them to be, for he aims at striking at the root of disease.'[17] In Dublin, the *Irish Independent* praised the book which: 'Opportunely comes at the present time when a health crusade is spreading throughout Ireland.'[18]

In 1913 his wife Edith died from appendicitis, which affected him deeply at a time when he had reached the peak of his career. It was a tragedy from which the whole Moore family never fully recovered.[19]

During the Great War (1914-18), he was employed by the Medical Research Council in London, where he was involved in solving the problems of TNT poisoning and TB in factory workers. He also carried out work on the treatment of surgical shock, including the use of intravenous administration of colloid solutions in the management of severe haemorrhage.[20] Towards the end of the war he recognised that the close proximity of workers in factories, engaged on the production of war materials, was a major factor in the spread of TB.[21] He proposed the establishment of an Industrial Health Medical Service (IHMS), staffed by demobilised personnel of the Royal Army Medical Corps, as a solution to their post-war unemployment problems. The IHMS scheme was to prove the forerunner of a modern Occupational Health Service.[22]

In 1920 he accepted the offer of the chair of biochemistry at Oxford University; this was named the 'Whitley Chair' after its founder, Edward Whitley (1879-1945), who had moved to Oxford in 1911 and donated the sum of £10,000 to endow the Chair named after him in 1920.[23] Moore was its first professor and Whitley his assistant. (During the late summer of 1920 they travelled to Geneva to study the flora of Lake Leman.) He returned briefly to Liverpool in the summer of 1920 to lecture on 'The New Crusade against Tuberculosis.' This included the observation that, egregiously, the incidence of pulmonary TB in Belfast was higher in urban females than in urban males. Moore explained this by the fact that the linen industry there employed greater numbers of women than men and that they worked closely together.[24] The Northern Irish professor settled in to his duties at Oxford and published his final work, which encapsulated his personal feelings on biochemistry.[25] All seemed set for an Oslerian conclusion to his academic career but, tragically, in January 1922 he developed influenza; this was complicated by liver failure (possibly related to TNT exposure during the Great War) and he died on 3 March.[26] In an obituary FG

Hopkins praised Moore's achievements: ' The progress of biochemistry during the first twenty years of this century owed much to his stimulating publications and to his personal influence over his colleagues and pupils.'[27]

Moore's reforming instincts were characterised by his foundation, together with other radical colleagues, of the *State Medical Association* (SMSA) in 1912. The first meeting took place in Liverpool on 26 July: its aims embodied many of the founding principles of the National Health Service established by the Labour government on 1 July 1948.[28] The first honorary treasurer of the SMSA was Dr Jane Harriet Walker (1859-1938). Born in Yorkshire, she qualified in Medicine in 1884, the forty-fifth woman to be entered on the General Medical Register.[29] In 1910 she opened a sanatorium at Nayling, Suffolk and, like Benjamin Moore deserves a place as a pioneer in the defeat of tuberculosis.

In conclusion, the author is aware of the many deficiencies in describing Moore's career in this brief article. For a comprehensive account, the reader is referred to the detailed and well-written book on the subject by his grandson.[1]

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Biographical details of the author: Robin Agnew MA MD (Dubl) FRCP (Irl) is an Emeritus Consultant Chest Physician from Liverpool. He is the author of many publications in general medical literature and particularly in medical history. He is the author of two books on the life and naval career of Sir John Forbes (1787-1861).

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